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| **Activity Overview**  *In this activity, you will create a new document with a* Graphs & Geometry *application to explore transformations of an absolute value function. You will use the table feature to examine the effect the transformation has on the coordinates.*  **Activity Materials**   * *Technology needed (TI-Nspire™ handheld, computer software)* |  |

**Steps**

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| **Step 1: Preparing the Document**   1. Open a new document by clicking c **>** **New Document > Add Notes**. 2. Using this Notes page as a title page, give it an appropriate title, such as **Exploring Transformations of a Function**.   **Note:** To type capital letters, press the g key, then the letter.   1. Press ~ **> File > Save As…**   Type: **Exploring\_Transformations\_of\_a\_Function**.  **Note:** To obtain the underscore, press / \_.  Tab to ¾, and press ·.  4. To add a new *Graphs* page, press / ~ **> Add Graphs**. |  |
| **Step 2: Enter the function into f1(*x*).**  1. The cursor should be in the function entry line at the bottom of the screen.  2. To graph **f1**(*x*) = , type: A B S (X) · .  **Note:** You can also access the absolute value template by pressing the t key. |  |
| **Step 3: Change the attributes of the graph to create a dashed line.**   1. To change the attributes, move the cursor near the graph until the cursor becomes a pointed finger (ø) and the graph turns bold.   2. Press / b **> Attributes**.A drop-down menu appears. Select the third line style in the second row of attributes by pressing ¤ ¢ ¢ so that “(3/3) Line style is dashed” appears. Press ·. Move the cursor away from the graph. |  |
| **Step 4: Enter a second function into f2(*x*).**  1. Press e to move the cursor to the function entry line for **f2**(*x*).  **Note:** You may also click the chevron () or press / G to display and/or hide the function entry line.  2. To graph **f2**(*x*) = 3, type 3 A B S (X) ·.  3. To move the function labels, move the cursor until it hovers over one of the labels. The word “label” appears and the cursor turns into an open hand (÷). Press / x to close the hand ({). Move the function label to an open space near the bottom left of the screen and press x. Repeat for the other function label.  **Note:** An alternate method of selecting an object is to press and hold x when the cursor is an open hand ÷. |  |
| **Step 5: Insert a table into a split screen layout.**  1. To insert a table, press / T.  2. Notice that we cannot see the values of **f2**(*x*) in the second column. To view these values, in the next step we will adjust the widths of the two parts of the split screen. |  |
| **Step 6: Adjust the widths of the split screen.**  1. Press ~ **> Page Layout > Custom Split**.  2. The message “Use + or – to choose a layout” appears for a moment, which allows you to toggle between a horizontal or vertical split. You may test this feature now if you wish, but a vertical split is the preferred view for this lesson.  3. To change the widths of the two parts of the screen, press ¡ or ¢. In this case, press ¡ a few times until you can read the values in the **f2**(*x*) column.  4. Press ·. |  |
| **Step 7: Edit the function in f2 and observe the graph and table.**  1. Use the e key to highlight the top of the table. Then use the ¤ ¢ keys to select the cell containing 3abs(*x*).  **Note:** You can also use the touchpad mouse to click on that cell.  2. To edit the expression, select **Menu** **> Table > Edit Expression**, or you may double-click the cell. Redefine **f2**(*x*) as .  3. This action will be repeated again by the students to redefine **f2**(*x*) as each of the following: , , and . |  |
| **Step 8: Save the document**  1. Redefine **f2**(*x*) back to its original definition, **f2**(*x*) = .  2. Press / S to save the document. |  |